

IN THE CLAIMS:

Following entry of the present amendment, the claims are as follows:

Claims 1-51 (canceled).

Claim 52 (currently amended). A first thin-film transistor (TFT) comprising source/drain and channel regions of a single grain of crystallized first film material formed from doping an amorphous first film with a transition metal through a transition metal window at a first concentration, first density of nucleation sites, and a first distance between nucleation sites, annealing said amorphous first film to form a first area of crystallized first film which is a single grain of crystal, the doping occurring, at least partially, simultaneously with the annealing of said first film, the doping of said first film being controlled by depositing A TFT as in claim 51 in which an insulator film having a first thickness is deposited over said amorphous first film, with said transition metal being deposited overlying said insulator film, and in which said transition metal diffuses through said insulator film into said amorphous first film first thickness during annealing, whereby the formation of said transition metal nucleuses is continually introduced during the annealing process to support the lateral growth of crystallization controlled, and etching a pattern in said first area of crystallized first film to form the source/drain regions, whereby a transistor is formed having high electron mobility and low leakage current in the transistor active areas.

Claim 53 (original). A TFT as in claim 52 in which said transition metal overlying said insulator film is selectively etched before annealing to form said transition metal window, whereby the size of said first area of crystallized first film is influenced.

Claim 54 (original). A TFT as in claim 52 in which said insulator film is deposited with an initial thickness and selectively etched to form an area having a first thickness, less than the initial thickness, and in which said transition metal is deposited over said first thickness of insulator film to form said transition metal window, whereby the size of said first area of crystallized film is influenced.

Claim 55 (original). A TFT as in claim 54 in which said initial thickness is 500 Å, or greater.

Claim 56 (original). A TFT as in claim 52 in which said insulator film has a first thickness in the range from 10 to 100 Å

Claim 57 (original). A TFT as in claim 52 in which said insulator material is selected from the group consisting of silicon dioxide and silicon nitride.

Claim 58 (original). A TFT as in claim 52 in which said transition metal is deposited with a thickness in the range from 10 to 1000 Å

Claims 59-70 (cancelled)

Claim 71 (currently amended). A thin-film transistor (TFT) structure, comprising:

a film of semiconductor material formed on a transparent substrate, said semiconductor material including a first area in which the semiconductor material is crystallized around selected transition metal nucleation sites. A TFT structure as in claim 61 in which the concentration of transition metal nucleuses in said first area being is controlled by depositing an insulator film having a first thickness over said film of semiconductor material, and in which transition metal is deposited overlying said insulator film such that said transition metal diffuses through said insulator film into said semiconductor material during annealing;

source/drain and channel regions formed in said first area; and the distance between said transition metal nucleation sites is no less than 2 microns, whereby a transistor is formed having high electron mobility and low leakage current in the transistor active areas.

Claim 72 (original). A TFT structure as in claim 71 in which said transition metal overlying said insulator film is selectively etched before annealing to form said transition metal window, whereby the size of said first area of crystallized first film is influenced.

Claim 73 (original). A TFT structure as in claim 71 in which said insulator film is deposited with an initial thickness and selectively etched to form an area having a first thickness, less than the initial thickness, in said first area, and in which said transition metal is deposited over said first thickness of insulator film to form a transition metal window, whereby the size of said first area of crystallized film is influenced.

Claim 74 (original). A TFT structure as in claim 71 in which said insulator film material is selected from the group consisting of silicon dioxide and silicon nitride.

Claim 75 (cancelled).